

Progress Report: U.S. Geological Survey Award No. 99HQGROO18
(Carleton Account 9173-07) Jan. 1,1999 - Nov.
1,1999

Title: Ground Motion Relations for Puerto Rico

Submitted by: Gail Atkinson, Principal Investigator Dept.
Earth Sciences, Carleton University

Our project to develop ground motion relations for Puerto Rico involves the compilation and processing of a large body of seismographic data from regional networks in Puerto Rico, followed by analysis and interpretation. Our research is proceeding approximately on schedule. With the help of our partners at the University of Puerto Rico in Mayaguez, we have obtained all of the digital waveforms recorded by the Puerto Rico Seismic Network (PRSN) since 1991 (IASPEI format); this includes more than 2000 waveforms, from nearly 200 events with $M > 4$. Processing procedures for these data have been developed and tested. We have also obtained all of the relevant 3-component broadband data from the IRIS station near San Juan (1993-present), and all of these data have been processed.

We have encountered some difficulties in data retrieval that are still being resolved. One problem is that the calibration information for the PRSN stations could not be found. Our partners at UPR are assisting by performing in-field calibrations to determine the response curves for the stations. We can also assess the response of the PRSN stations relative to the calibrated broadband station, as an alternative strategy. Another difficulty has been the delay in the installation of the new broadband stations in Puerto Rico, which means we have not been able to add new broadband data to our ground motion database yet. These new data will be added as they come online next year. Finally, we determined that early data, collected by the PRSN prior to 1991, could not be recovered from the data tapes at UPR, due to lack of appropriate reading equipment (the tape format is outdated). We have developed a separate proposal to USGS to recover these data, using equipment available at Lamont. If these additional data can be recovered they will be added to the database next year.

In addition to compiling and processing data, we have also attended a Seismic Hazards workshop in San Juan, where we were able to discuss the needs of the user communities with regards to our project. We are now aware that early results from our project are needed by several user groups (including the USGS seismic hazard mapping project) and we have committed to making these available to those groups at the soonest possible date (pre-publication).

In summary, we are pleased with the progress during the 1st year of this project. We have encountered some unexpected difficulties in data retrieval and processing, but have plans in place to deal with these problems and move towards an on-schedule completion of the project.